

IN THE CLAIMS:

1. (withdrawn) A medical examination suite, comprising:
an exam room having a microphone and at least a portion of a medical imaging system therein, a microphone sensitivity zone located in said exam room; and

an equipment room having a computer therein, said computer coupled to said microphone.
2. (withdrawn) A medical examination suite according to Claim 1 further comprising a control room adjacent said exam room and having a video monitor and controls for said imaging system therein, and wherein said imaging system further comprises at least one video monitor and manual controls located in said exam room.
3. (withdrawn) A medical examination suite according to Claim 1 further comprising an audio speaker located in said exam room, said speaker coupled to said computer.
4. (withdrawn) A medical examination suite according to Claim 3 further comprising an audio amplifier coupled to said speaker, said audio amplifier coupled to said computer.
5. (withdrawn) A medical examination suite according to Claim 1 further comprising an audio mixer and amplifier coupled to said microphone, said mixer and amplifier coupled to said computer.
6. (withdrawn) A medical examination suite according to Claim 1 where said controls in said control room comprise X-ray generator controls, motor controls, and image review controls.
7. (withdrawn) A medical examination suite according to Claim 1 wherein said computer is programmed to perform at least one of word and phrase recognition.

8. (withdrawn) A medical examination suite according to Claim 1 wherein said computer operates in accordance with a standard speech application program interface.

9. (withdrawn) A voice activated control subsystem for a medical imaging system, said control subsystem comprising:

an audio microphone configured to be positioned for receiving audio input from an operator;

an audio amplifier for receiving audio signals generated by said microphone;
and

an audio signal processor coupled to said amplifier for processing amplified audio signals from said amplifier, said processing comprising at least one of word and phrase recognition.

10. (withdrawn) A voice activated control subsystem in accordance with Claim 9 wherein said microphone comprises a highly directional microphone.

11. (withdrawn) A voice activated control subsystem in accordance with Claim 9 further comprising a speaker coupled to an audio amplifier, said audio amplifier coupled to said processor.

12. (withdrawn) A voice activated control subsystem in accordance with Claim 9 wherein said audio signal processor operates in accordance with a standard speech application program interface.

13 (currently amended) An X-ray exam system, comprising:

an x-ray source;

a detector positioned to receive x-rays transmitted from said x-ray source;

a patient table positioned so that said x-ray source emits x-rays towards a patient thereon;

a video monitor for displaying images that are sampled and reconstructed while performing an exam; and

a voice activated control system coupled to said x-ray source, said detector, and said video monitor, said voice activated control system for controlling playback imaging sequencing during the exam based on a voice command to facilitate analysis of a plurality of images acquired ~~images—during the exam~~, said control system comprising an audio microphone configured to be positioned for receiving audio input from an operator, and an audio signal processor coupled to said microphone for processing amplified audio signals from said amplifier, said processing comprising at least one of word and phrase recognition, said control system coupled to controls ~~for at least one~~ of said x-ray source, said detector, and said monitor for executing commands received by said control system.

14 (original) An X-ray exam system according to Claim 13 further comprising an audio amplifier for receiving audio signals from said microphone, said amplifier coupled to said computer.

15 (original) An X-ray exam system according to Claim 13 wherein said microphone comprises a highly directional microphone.

16 (original) An X-ray exam system according to Claim 13 wherein said voice activated control system further comprising a speaker coupled to an audio amplifier, said audio amplifier coupled to said processor.

17 (original) An X-ray exam system according to Claim 13 wherein said X-ray source, said detector, said monitor, and said microphone are located in an exam room, a microphone sensitivity zone located in said exam room.

18 (original) An X-ray exam system according to Claim 13 wherein said controls comprise X-ray generator controls and image review controls.

REMARKS

The Office Action mailed June 3, 2003, and made final, has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

Claims 13-18 are pending in this application. Claims 1-12 have been withdrawn. Claims 13-18 have been rejected.

The objection to the Abstract is respectfully traversed. The Abstract has been amended and is submitted to be in the proper language and format for an Abstract. For the reason set forth above, Applicants respectfully request that the objection to the Abstract be withdrawn.

The objection to Claim 13 is respectfully traversed. Applicants respectfully submit that Claim 13 particularly points out and distinctly claims the apparatus which the Applicants regard as the invention. More specifically, Claim 13 recites a "voice activated control system for controlling playback imaging sequencing based on a voice command to facilitate analysis of a plurality of acquired images." Applicants respectfully submit that Claim 13 enables one skilled in the art to use the invention as recited. For the reasons cited above, Applicants respectfully request that the objection to Claim 13 be withdrawn.

The rejection of Claims 13-18 under 35 U.S.C. § 103 as being unpatentable over Faul et al., "Faul" (U.S. Patent No. 5,440,606) in view of Mattson et al., "Mattson" (U.S. Patent No. 5,303,148) is respectfully traversed.

Faul describe an x-ray control system that includes an x-ray source (1), a detector, a patient table, a speech recognition circuit (6), and a video monitor (7) serially connected to the x-ray control system by a signal transmission path (3) via an interface device (4). The x-ray control system also includes a microphone (9) to allow an operator to input instructions in the form of spoken commands. Faul also describes that the video control circuitry holds data related to the available commands for speech controlled instructions and/or data input. By observing the monitor, the operator can determine which commands he/she have already executed.

Mattson describe a method for displaying and processing medical image data using a voice activated control system (D). The control system includes a microphone (10), a speech processor (12), a command interpreter (14), a volume imager (18), and a video recorder (20). In use, a physician speaks commands which are received by the microphone. The speech processor converts the audio signals into word signals. The command interpreter compares each word signal with a list of previously authorized command words. A corresponding command signal is then sent to the volume imager, a video recorder, or a printer. The volume imager then generates an image representative of a portion of the image stored therein. Mattson further describe that the method facilitates providing a user friendly diagnostic image display and evaluation recordation system.

Applicant respectfully submits that the Section 103 rejection of Claims 13-18 is not a proper rejection and that a prima facie case of obviousness has not been established. To establish a prima facie case of obvious, three basic criteria must be met. First the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated one skilled in the art to modify a reference or to combine references. Second, the proposed modification must have a reasonable expectation of success. Third, the prior art reference or combination must teach or suggest all the limitations of the specific combination claimed by the applicant.

Also, the teachings or suggestions, as well as the expectation of success, must come from the prior art, not the applicant's disclosure. It is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art.

Applicants respectfully submit that Faul and Mattson, considered alone or in combination, do not describe nor suggest all the limitations of the claimed invention.

Specifically, Claim 13 recites an X-ray exam system including "an x-ray source...a detector positioned to receive x-rays transmitted from said x-ray source...a patient table positioned so that said x-ray source emits x-rays towards a patient thereon...a video monitor for displaying images that are sampled and reconstructed while performing an exam...a voice activated control system coupled to said x-ray source, said detector, and said video monitor, said voice activated control system for controlling playback imaging sequencing during the exam based on a voice command to facilitate analysis of a plurality of images acquired during the exam, said control system comprising an audio microphone configured to be positioned for receiving audio input from an operator, and an audio signal processor coupled to said microphone for processing amplified audio signals from said amplifier, said processing comprising at least one of word and phrase recognition, said control system coupled to controls of said x-ray source, said detector, and said monitor for executing commands received by said control system."

Neither Faul nor Mattson, considered alone or in combination, describe nor suggest an X-ray exam system including an x-ray source, a detector positioned to receive x-rays transmitted from the x-ray source, a patient table positioned so that the x-ray source emits x-rays towards a patient thereon, a video monitor for displaying images that are sampled and reconstructed while performing an exam, a voice activated control system coupled to said x-ray source, said detector, and said video monitor, said voice activated control system for controlling playback imaging sequencing during the exam based on a voice command to facilitate analysis of a plurality of images acquired during the exam, said control system comprising an audio microphone configured to be positioned for receiving audio input from an operator, and an audio signal processor coupled to said microphone for processing amplified audio signals from said amplifier, said processing comprising at least one of word and phrase recognition, said control system coupled to controls of said x-ray source, said detector, and said monitor for executing commands received by said control system. Specifically, no combination of Faul and Mattson describes or suggests a video monitor for displaying images that are sampled and reconstructed while performing an exam. Moreover, no combination of Faul and Mattson describes or suggests a voice activated control system for controlling playback imaging sequencing during the exam based on a voice command to

facilitate analysis of a plurality of images acquired during the exam. Rather Faul describes an x-ray system that is controlled by voice commands that includes a video monitor for displaying textual representations of commands that are available to the user and commands that have been issued by the user, and Mattson describe a voice controlled image and display controller that includes a video monitor for displaying "pictures of selectable slices through a volumetric region of interest based on previously executed CT or MRI scans." Accordingly, neither Faul nor Mattson considered alone or in combination describe or suggest a video monitor for displaying images that are sampled and reconstructed while performing an exam. In addition, neither Faul nor Mattson considered alone or in combination describe or suggest a voice activated control system for controlling playback imaging sequencing during the exam.

Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. Obviousness cannot be established by merely suggesting that it would have been obvious to one of ordinary skill in the art to modify Faul according to the teachings of Mattson. As explained by the Federal Circuit, "to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant." In re Kotzab, 54 USPQ2d 1308, 1316 (Fed. Cir. 2000). MPEP 2143.01.

Moreover, the Federal Circuit has determined that:

[I]t is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that "[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention."

In re Fitch, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992). Further, under Section 103, "it is impermissible . . . to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art." In re Wesslau, 147 USPQ 391, 393 (CCPA 1965). Rather, there must be some suggestion, outside of Applicants' disclosure, in the prior art to combine such references, and a reasonable

expectation of success must be both found in the prior art, and not based on Applicants' disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion nor motivation to combine the cited art, nor any reasonable expectation of success has been shown.

Although it is asserted within the Office Action that Faul teach the present invention except for disclosing an apparatus including a monitor for displaying images, and a voice control system for controlling playback of images based on a voice command to facilitate analysis of a plurality of acquired images, and that Mattson discloses a monitor and voice control system that enables a practitioner to view images in real time while allowing hands free operation, no motivation or suggestion to combine the cited art has been shown. Since there is no teaching nor suggestion in the cited art for the claimed combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicants respectfully request that the Section 103 rejection of Claims 13-18 be withdrawn.

Moreover, Applicants respectfully disagree with the assertion in the Office Action, at page 4, line 4-6, that "Mattson et al. teach that the monitor and voice control system enables a medical practitioner to view images of an object of interest in real time while allowing hands free operation of system components." Rather, Applicants respectfully submit that Mattson describes that the images are from a previously executed scan and are not real-time images. For example, Mattson recites, at column 3, lines 22-27:

A video monitor B selectively provides displays of pertinent information during surgery. These displays include pictures of selectable slices through a volumetric region of interest based on previously executed CT or MRI scans.

Accordingly, Mattson describes a memory access means that is used to retrieve the elements of data corresponding to a selected slice or projection of the imaged volume from a previously executed scan. Claim 13 recites "a video monitor for displaying images that are sampled and reconstructed while performing an exam."

Applicants also respectfully disagree with the assertion in the Office Action at page 4, line 10 through page 5, line 3, that:

It would have been obvious to modify the apparatus of Faul et al. such that it incorporated a) a monitor for displaying images and b) a voice control system for controlling playback of images based on a voice command. One would have been motivated to make such a modification so that a medical practitioner could view acquired images in real time, while simultaneously performing other medical procedures as taught by Mattson et al.

Neither Faul nor Mattson, considered alone or in combination, describe viewing images in real-time. More specifically, Faul does not describe viewing images at all but, rather describes displaying textual information regarding voice commands that are available and voice commands that have been given, and Mattson describes displaying images from previously executed scans during surgery.

Furthermore, Applicants respectfully submit that no motivation for the combination can be found within Faul and Mattson, as Faul and Mattson teach away from each other. Specifically, Faul describes a voice-controlled x-ray system, and in contrast, Mattson describes a voice controlled image display system that is used during surgery to display images from previously executed scans. It would be impracticable to combine the references as operating an x-ray system to image a region of interest while performing surgery on the same area of interest would be dangerous for the patient and operating room personnel. To image a patient using x-rays requires clearing the immediate vicinity to avoid exposing operating room personnel to ionizing radiation and other imaging modalities require large magnets and/or rotating gantries for image acquisition. As such, there is no reasonable expectation of success of such a combination, and Faul and Mattson teach away from each other and the present invention.

If art "teaches away" from a claimed invention, such a teaching supports the nonobviousness of the invention. U.S. v. Adams, 148 USPQ 479 (1966); Gillette Co. v. S.C. Johnson & Son, Inc., 16 USPQ2d 1923, 1927 (Fed. Cir. 1990). In light of this standard, it is respectfully submitted that the cited art, as a whole, is not suggestive of the presently claimed

invention. More specifically, Applicants respectfully submit that Mattson teaches away from Faul, and as such, there is no suggestion or motivation to combine Faul with Mattson.

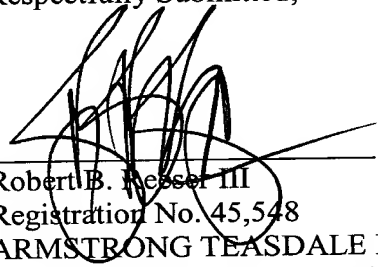
For the reasons set forth above, Claim 13 is submitted to be patentable over Faul in view of Mattson.

Claims 14-18 depend directly from independent Claim 13. When the recitations of Claims 14-18 are considered in combination with the recitations of Claim 13, Applicants respectfully submit that dependent Claims 14-18 likewise are patentable over Faul in view of Mattson.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 13-18 be withdrawn.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,



Robert B. Nesser III
Registration No. 45,548
ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600
St. Louis, Missouri 63102-2740
(314) 621-5070